

Title (en)

Method for slicing a semiconductor silicon single crystal.

Title (de)

Verfahren zum Zerteilen eines Halbleiterkristalls aus Silizium.

Title (fr)

Procédé pour couper en tranches un cristal semiconducteur de silicium.

Publication

EP 0477698 A1 19920401 (EN)

Application

EP 91115540 A 19910913

Priority

JP 24737790 A 19900919

Abstract (en)

A single crystal of semiconductor silicon can be sliced into wafers not by the conventional mechanical means but by a novel chemical means so that advantages are obtained in the reduced material loss by cutting and in the absence of any mechanically stressed layer in the surface of the wafer as sliced. The method comprises conducting electrolysis of an aqueous solution containing sulfuric and hydrofluoric acids with a fine platinum wire as the anode to evolve oxygen containing ozone on the anode surface while a single crystal of silicon is held in proximity to the wire anode so that the nascent oxygen formed from the ozone oxidizes silicon into silicon dioxide which as formed is dissolved away in the acidic medium to leave a groove in the single crystal. When the wire anode or the single crystal is continuously moved to keep a small distance between the wire anode and the groove bottom, the whole single crystal body is cut through to form a wafer. <IMAGE>

IPC 1-7

B23H 7/02; **C30B 29/06**; **C30B 33/00**

IPC 8 full level

B26F 3/00 (2006.01); **B23H 7/02** (2006.01); **B28D 5/00** (2006.01); **C30B 33/00** (2006.01); **H01L 21/304** (2006.01)

CPC (source: EP US)

B23H 7/02 (2013.01 - EP US); **C30B 29/06** (2013.01 - EP US); **C30B 33/00** (2013.01 - EP US)

Citation (search report)

- [A] EP 0045446 A1 19820210 - SIEMENS AG [DE]
- [A] PATENT ABSTRACTS OF JAPAN vol. 13, no. 124 (C-580)(3472) 27 March 1989 & JP-A-63 295 500 (SHIN ETSU CHEM CO. LTD) 1 December 1988
- [A] REVIEW OF SCIENTIFIC INSTRUMENTS vol. 40, no. 3, March 1969, NEW YORK USA pages 509 - 511; W.R.SPENCER ET AL: 'Wire-slicing attachment modification for the servomet spark machine'

Cited by

DE4340589A1; CN114670344A; EP0799914A3; CN112497534A; US6284661B1

Designated contracting state (EPC)

DE GB IT

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